

REMARKS

Reconsideration and allowance in view of the foregoing amendments and the following remarks are respectfully requested.

Claim 31 has been canceled without prejudice or disclaimer, and Claim 25 has been amended to incorporate features originally recited in Claim 31. Therefore, favorable consideration of pending Claims 1-30 and 32-49 is respectfully requested.

THE OBJECTION TO THE DRAWINGS

Attached to this Response are corrected drawings as required in paragraph 4 of the Office Action. In particular, the Applicant is submitting revised FIGS. 1, 12A, and 12B, as required by the Examiner. Favorable consideration is requested.

THE OBJECTION TO THE SPECIFICATION

Appendix A (below) includes a new Abstract of the Disclosure that conforms with the requirements of MPEP §608.01(b) and 37 C.F.R. §1.72.

Appendix B (below) includes replacement paragraphs for the specification of the present application to reflect that FIGS. 12A and 12B have replaced FIG. 12, and to further provide appropriate trademark/registration designations as required by page 2 of the Office Action.

Favorable consideration is respectfully requested.

THE OBJECTION TO THE CLAIMS UNDER 35 U.S.C. §112, SIXTH PARAGRAPH

Claim 9 is presently amended so as to comply with the requirements of 35 U.S.C. §112, sixth paragraph. Favorable consideration is requested.

THE REJECTION UNDER 35 U.S.C. §102(e)

Claim 25, 26, 28, and 32 were rejected under 35 U.S.C. §102(b) as being anticipated by Saadeh, et al. (U.S. Patent 5,283,905; hereafter “Saadeh”). This rejection is rendered moot by the present amendment to Claim 25, from which Claims 26, 28, and 32 depend. Specifically, Claim 25 has been amended to recite that the claimed computing device is compatible with an automobile, similar to the recitation of canceled Claim 31. Therefore, since Saadeh does not teach such feature, it is respectfully submitted that Saadeh does not teach the invention of Claims 25, 26, 28, and 32, and therefore the rejection under 35 U.S.C. §102(b) should be withdrawn.

THE REJECTIONS UNDER 35 U.S.C. §103(a)

In the outstanding Office Action:

1) Claims 1-4, 8, 10, 15, 16, 32, and 36 were rejected under 35 U.S.C. §103(a) as being unpatentable over the admitted prior art (hereafter “APA”) in view of Mills, et al. (U.S. Patent 5,696,917; hereafter “Mills”);

2) Claims 6, 7 and 33 were rejected under 35 U.S.C. §103(a) as being unpatentable over APA and Mills in view of Heyden, et al. (U.S. Patent 5,798,961; hereafter “Heyden”);

3) Claims 5, 9, 11, 12, 21-23, 25, 26, 28, 31, 34, 35, 37, 39, 40, 43, 44, and 48 were rejected under 35 U.S.C. §103(a) as being unpatentable over APA and Mills in view of Saadeh;

4) Claims 14, 30, 41, 45, 47, and 49 were rejected under 35 U.S.C. §103(a) as being unpatentable over APA, Mills, Saadeh, and Clohset (U.S. Patent 5,384,747; hereafter “Closhset”);

5) Claims 13, 29, 42, and 46 were rejected under 35 U.S.C. §103(a) as being unpatentable over APA, Mills, Saadeh, and Price (U.S. Patent 5,604,709; hereafter “Price”);

6) Claim 27 was rejected under 35 U.S.C. §103(a) as being unpatentable over APA, Mills, Saadeh, and Heyden; and

7) Claim 38 was rejected under 35 U.S.C. §103(a) as being unpatentable over APA, Mills, and Clohset.

For at least the reasons that follow, the Applicant respectfully traverses all over the above-listed rejections under 35 U.S.C. §103(a), and further request that these rejections be reconsidered and withdrawn.

THE APPLICANT’S RESPONSE

The Applicant respectfully submits that the outstanding rejections under 35 U.S.C. §103(a), listed as rejections 1) through 7) above, fail to establish a *prima facie* case of obviousness. Further, in accordance with MPEP §2142, which states in part, “If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness,” the Applicant, in good faith and belief that a *prima facie* case of obviousness has not

been established by above of the above-listed rejections 1) through 7), requests that all outstanding rejections under 35 U.S.C. §103(a) be reconsidered and withdrawn.

As set forth in MPEP §§2142 and 2143, a *prima facie* case of obviousness has three basic requirements, including: a) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; b) there must be a reasonable expectation of success; and c) the prior art references must teach all of the claim limitations. The Applicant respectfully submits that the proposed combinations of references, primarily the combination of APA and Mills, fail to meet at least requirement a) (above), and therefore no *prima facie* case of obviousness has been established.

More specifically, in the “Background” of the specification of the present application, Fig. 1 is described as showing a portion of a storage system having non-volatile storage 12 and DRAM 14. The description of the relationship between non-volatile storage 12 and DRAM 14 in Fig. 1 includes a technical challenge that reads, in part:

...the challenges associated with providing automotive computing devices such as the Auto PC can be distilled down to not having enough time to write the critical contents of the DRAM into non-volatile memory in the event of an abrupt power shutdown. (see Specification, page 4, line 2 – page 5, line 2).

However, Mills does not respond to the technical challenge set forth on pages 4 and 5 of the specification (see above). Rather, Mills teaches away from the

embodiment in APA by advocating against the inclusion of a volatile DRAM in the asynchronous non-volatile memory described therein. In particular, col. 12, lines 10-19 of Mills (portions of which are cited in the rejection) states:

...SRAM 240 can be written to, and read from, faster than can volatile DRAM. Thus, a cache line of internal cache 215 of microprocessor 210 can be filled from SRAM 240 faster than would be the case if a DRAM based main memory was used. Also, programs executing from SRAM 240 can be accessed, and hence executed, faster than would be the case if a DRAM based memory was used.
(emphasis provided by Applicant)

By discrediting the merits of DRAM relative to SRAM to thereby explain the absence of DRAM from the asynchronous volatile memory, Mills not only teaches away from APA in Fig. 1 of the present application, but also eliminates any motivation for one of ordinary skill to combine APA with Mills.

As further evidence of Mills' lack of teaching regarding the desirability of the proposed combination with APA, Figs. 13 and 15 of Mills show block diagrams of computer systems that use DRAM to access a flash memory. However, the description of Figs. 13 and 15 do not teach or even suggest the inclusion of an SRAM in the computer system. Rather, Figs. 13 and 15 are suggestive only of Fig. 1 of the present application. That is, Mills describes APA.

Therefore, *arguendo*, even if APA and Mills could be combined, the resultant combination would not be obvious because the prior art does not suggest the desirability of the combination, *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990), as discussed in MPEP §2143.01.

CONCLUSION

For at least the reasons set forth above, it is respectfully submitted that the rejections over the cited references should be reconsidered and withdrawn.

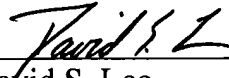
The remaining references of record have been considered. It is respectfully submitted that they do not compensate for the deficiencies of any of the references utilized in rejecting the pending claims, particularly APA and Mills.

All objections and rejections having been addressed, it is respectfully submitted that the present application is now in condition for allowance. Early and forthright issuance of a Notice of Allowability is respectfully requested.

Respectfully Submitted,

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APPENDIX A

ABSTRACT OF THE DISCLOSURE

Methods and systems for operating automotive computing devices are described. In one embodiment, a small amount of static RAM (SRAM) is incorporated into an automotive computing device. The SRAM is battery-backed to provide a non-volatile memory space in which critical data can be maintained in the event of a power loss. Circuitry is provided to ensure that the SRAM receives back up power from the battery at the appropriate time. Software manages the SRAM and the other storage assembly components and makes use of virtual paging or virtual addressing techniques to keep track of where various pages, including object store pages, are stored in the system. The software knows exactly where all of the object store pages are stored so that in the event of a power loss, the page locations are known and hence the pages can be used when power is restored.

APPENDIX B

IN THE SPECIFICATION

Please delete the paragraph on page 1, lines 6-21 of the specification, and insert the following replacement paragraph:

-- Automobiles are becoming increasingly popular platforms on which to provide computing devices. One popular computing device in the automotive space is Microsoft's Auto PC. Powered by the Microsoft Windows® CE operating system, the Auto PC is Microsoft's in-car entertainment and information platform technology. Hardware versions of the Auto PC platform can fit into most automobile dashboards, have color LCD screens, high-powered AM/FM stereos, and CD-ROM drives. The inclusion of the CD-ROM drive allows users to access vast stores of data on their Auto PC. The Auto PC is ideally an extensible platform which can be built upon to provide added applications and functionality for the user. For example, applications can be provided that enable drivers to use voice commands to check e-mail and schedules, find phone numbers, make calls on their car phones and get news and other information. The Auto PC can include applications that permit wireless Internet access for the purpose of searching and retrieving information over the Web. The Auto PC platform provides a platform for a seemingly endless number of user applications that can greatly enhance the user's experience.--

Please delete the paragraphs from page 1, line 24 through page 2, line 19 of the specification, and insert the following replacement paragraphs:

-- In automobiles using Windows® CE or any other type of operating system, there is typically critical data that the system uses which is usually stored in so-called working RAM (i.e. volatile dynamic random access memory) for speed of access. This critical data can include application data (e.g. navigation data, address book data, third party installed applications and the like). Dynamic random access memory has to be constantly refreshed or the data that it contains will be lost. If the power is lost, the DRAM cannot be refreshed and, hence, any critical data that it contains is lost.

Current Windows® CE implementations, as well as other implementations, use a small cell back-up battery that is used to back up the entire DRAM when the system goes in a standby mode associated with, for example, a power loss. For automotive requirements (such as Auto PC and the like), there are a number of problems with this solution. Typically, the batteries that are used for backup purposes do not meet automotive specifications. For example, the temperature ranges at which the batteries work are not suitable for the temperature ranges typically encountered by automobiles. Additionally, automotive manufacturers or original equipment manufacturers (OEMs) do not want consumers to have to go to the burden of replacing the backup batteries when they eventually fail. The backup batteries, such as those produced by Tadiran, which do meet automotive requirements are limited to a few microamps of current draw if the non-rechargeable battery is to last the life of the product without replacement.--

Please delete the paragraph on page 7, lines 3 and 4 of the specification, and insert the following replacement paragraph:

--Figs. 12A and 12B are combined to show a table describing aspects of handling object store page exceptions.—

Please delete the paragraph on page 10, lines 1-12 of the specification, and insert the following replacement paragraph:

-- The computer 202 runs an open platform operating system which supports multiple applications. Using an open platform operating system and an open computer system architecture, various software applications and hardware peripherals can be produced by independent vendors and subsequently installed by the vehicle user after purchase of the vehicle. This is advantageous in that the software applications do not need to be specially configured for uniquely designed embedded systems. In the illustrated example the open hardware architecture runs a multitasking operating system that employs a graphical user interface. A multitasking operating system allows simultaneous execution of multiple applications. One such operating system is the *Windows®* brand of operating systems (e.g., the *Windows®* CE operating system) sold by Microsoft Corporation of Redmond, Washington.--

Please delete the paragraph on page 37, lines 21-24 of the specification, and insert the following replacement paragraph:

-- If the physical address is not in range, the fault does not correspond to an object store page, so the handler will simply return. However, if it is in range, the handler will take appropriate action, as outlined below, as well as in the Table of Figs. 12A and 12B entitled "Handling Object Store Page Exception".—

Please delete the paragraph on page 39, lines 14-17 of the specification, and insert the following replacement paragraph:

-- Figs. 12A and 12B contain a table that generally summarizes the processing that takes place for handling object store page exceptions in accordance with the described embodiment. The explanation of the table is believed to be fairly straight forward and, for the sake of brevity, is not repeated here.--